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ORIGINAL PAPER

Problem Gambling in Greece: Prevalence and Risk Factors During the Financial Crisis

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Abstract

In Greece no study has ever been conducted on the prevalence of problem gambling. Therefore, a cross-sectional survey was carried out amid the recession aiming to (1) estimate past year prevalence of problem gambling, (2) explore socio-economic and demographic differences among gamblers and non gamblers, (3) explore socio-economic and demographic differences among gamblers who started gambling prior and during the downturn and (4) identify its risk factors with a special interest in the influence of the recession. To this end, data emanating from a telephone and patron survey were combined. A random and representative sample of 3.404 people participated in the telephone survey and 2.400 in the patron survey. The interview schedule was the same in both studies. The presence of problem gambling was assessed with the Canadian Problem Gambling Index. Information on participants' socio-economic and demographic characteristics as well as their ways of dealing financially with the crisis were collected. Findings indicated that 2.4% of respondents met criteria for problem gambling. Male gender, minority status, living with family of origin, low educational level and low to zero income were found to constitute the risk factors of the disorder. Moreover, having started gambling during the recession increased the odds of suffering from problem gambling; however this finding was gender-specific. Thus, people end up in problem gambling through various pathways, with these trajectories being different for men and women. Any intervention should address the complexity of the issue and be tailored by gender.

Keywords Behavioural addiction · Gambling disorder · Epidemiology · Financial crisis · Gender effect · Mental health

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Introduction

Gambling is a common, socially acceptable and legal form of entertainment in most cultures worldwide (Ladouceur et al. 2002). Therefore for the majority of the population, it constitutes a recreational activity with no adverse repercussions; however, for a small minority it progresses to problem gambling (Wiebe and Volberg 2007). To date, most researchers have agreed that the term "problem gambling" refers to gambling behavior that is serious enough to yield negative outcomes on the person who gambles, his/her family and social networks as well as for the community overall (Brooker et al. 2009; Loo et al. 2011; Raylu and Olei 2002; Shaffer and Hall 2001). Its most severe form, "pathological gambling" (Toce-Gerstein et al. 2003), results in serious personal and societal problems; including financial, legal, employment, medical and psychological difficulties.

The broad and detrimental effects of pathological gambling have rendered it a growing public health concern worldwide, especially in light of the widespread availability and consumption of gambling related products during the last decades (Marshall 2009). In this context, national community surveys have been conducted internationally in order to plan education, prevention and treatment (Volberg 1994). In a meta-analysis of 119 prevalence studies conducted in the USA and Canada, Shaffer and colleagues have found that lifetime and past-year prevalence rates of pathological gambling are 1.6 and 1.14 respectively (Shaffer et al. 1999). More recently, Sassen et al. (2011) have systematically reviewed any study conducted between 2000 and 2011 and have found that past year prevalence of pathological gambling ranges from 0.02 to 2%. Nonetheless, the vast majority of research has been conducted in Canada and the United States (Stucki and Rihs-Middel 2007; Wiebe and Volberg 2007), while European data emanate predominantly from UK, the Scandinavian countries, Switzerland and Germany (Sassen et al. 2011). Interestingly, a systematic review of all European epidemiological studies concerning pathological gambling in the general adult population has recorded wide availability of pertinent studies in Northern, Western and Central Europe; while it stresses the scarcity of nationwide studies from Eastern and Southern Europe (Kun et al. 2012).

Apart from estimating the prevalence of pathological gambling, another strand of epidemiological research has concentrated on delineating its risk factors. Volberg (1996) has stressed the importance of acquiring such knowledge in order to design, rectify and implement effective interventions. Nonetheless, in spite of its significance, the existing literature on risk factors is sparse (Johansson et al. 2009). The demographic characteristics of pathological gamblers have been examined in clinical samples (Ladouceur et al. 2002); however, the degree to which these findings can be extrapolated to serious problem gamblers in the general population is questionable (Abbott et al. 2004a). In a critical review on the topic, Johansson et al. (2009) argue that with the exception of gender and age, available evidence is inconclusive, if not contradictory, with regard to the influence of marital status, educational attainment and socio-economic indices (income, financial difficulties, etc.). They stress the need for more research on the topic, a call similar to the one made by Raylu and Olei (2002). Moreover, Volberg et al. (2001) conducted a general population survey in Sweden and concluded that the groups most at risk of problem gambling were "those who are disadvantaged and marginalized by international economic changes as well as the dismantling of the Swedish welfare system" (p. 250). The latter findings receive heightened attention in light of the global financial crisis.

One macrosocial/situational factor that has been suggested to affect gambling behaviour is recession; however, there is dearth of research on the influence of the global

economic crisis (Olason et al. 2015). Existing studies from the USA corroborate a link between economic recessions and gambling behaviour, as indicated by an increase in lotteries and a decrease in casino type games (Horvant and Paap 2012; Lyons 2013). Similarly, studies from Iceland have replicated this finding; while they have provided additional evidence with respect to the association between financial hardship and gambling behaviour (Olason et al. 2015, 2017).In particular, respondents who reported experiencing financial strain were more likely to have bought lotto or scratch tickets during the recession than those who did not (Olason et al. 2015, 2017). In this reasoning, the authors argue that people who experience financial hardship during the recession consider gambling as an attractive means for dealing with their financial situation. Concerning problem gambling, the two studies have yielded conflicting results. Findings from the repeated cross-sectional study substantiate a marked increase in the corresponding prevalence from 1.6% in 2005/2007 to 2.5% in 2011 (Olason et al. 2015). On the contrary, the longitudinal study of the same research group did not document a statistically significant effect of the economic downturn (Olason et al. 2017). In this reasoning, further research is warranted prior to drawing any conclusions about the influence of the global economic crisis on problem gambling.

In this context, a cross-sectional survey was carried out in Greece so as to estimate the prevalence of problem gambling in the general population and to identify its correlates. Concomitantly, as the country is facing an enduring economic crisis since 2008, the present study endeavoured to shed light on the influence of the recession on the disorder. As this is the first prevalence study ever conducted in Greece, comparisons before and after the outset of the crisis could not have been made. Nonetheless, respondents were asked to identify the year they started their involvement in gambling, so as to differentiate between participants who gambled before the crisis (old gamblers) and those who started during the crisis (new gamblers). Further, building upon existing work on the impact of the recession on mental health in Greece (Economou et al. 2014), certain items enquiring about the crisis were integrated.

Therefore, the present report set out to examine the following objectives:

1. To estimate 1-year prevalence of problem gambling in the general population in Greece.
2. To explore socio-economic and demographic differences between problem gamblers and non-problem gamblers.
3. To explore socio-demographic and demographic differences between old and new gamblers.
4. To identify risk factors of problem gambling in the general population.
5. To identify risk factors of problem gambling among gamblers with a special interest on the influence of the recession.

To this end and in an attempt to minimize the emergence of selection and sampling bias discerned in the majority of telephone surveys (Stuki and Rihs-Middel), the present study followed a similar methodology to that of Gambling Impact and Behavior Study (Gerstein et al. 1999): a telephone survey alongside a patron survey. Further, to meet the fourth aim of the study, gender was manipulated as a moderator variable in line with evidence suggesting that men and women display differences in the trajectories of problem gambling (Blanco et al. 2006; Shaffer et al. 2004; Martins et al. 2004).

Methods

Sample

The study combined data from two sources: a telephone-based survey and survey of personal interviews at selected OPAP (Greek Organization of Football Prognostics SA) retail points.

Telephone Survey

The sampling frame of the telephone survey was the national phone-number databank, providing coverage for the vast majority of households in the country. The particular database encompasses landline telephone numbers solely and therefore it does not entail any mobile phone numbers. A stratified sampling procedure was employed taking into account the following three variables: (1) geographic region, (2) gender and (3) age. Landline phone numbers of businesses were excluded on statistical and ethical grounds. Within each household, the person who had their birthday last was selected for the interview, provided their age was within the 18–80 age range. At least 6 call backs were allowed and to be included into the sample, participants had to be fluent Greek speakers.

In total, out of 4.400 calls made, 3.404 interviews were successfully completed (response rate = 77.4%). No statistically significant differences were documented between participants and non-participants with regard to geographic region, gender and age. Furthermore, the sample was weighted in terms of place of residence, gender and age distribution to match the 2001 population census. Cells that were found to have low frequency were collapsed before the weight computation. The weights were calculated for the stratums defined by the sampling framework and were also adjusted for interview non-response.

Patron Survey

The patron survey occurred in 18 large cities in Greece, half of them with a casino and the other half matched for its population size. The sampling frame of the study was a list of OPAP retail stores in these cities. A total of 40 OPAP retail stores were randomly selected (2–5 OPAP retail points were randomly selected in each city). Outside each OPAP retail point, the third person exiting the store was selected for an interview. A total of 2800 patrons were approached and 2400 agreed to participate (response rate = 85.7%).

Merging of Files

The two surveys were combined under the key assumption that the two surveys represent the same population, adults 18 years and older in Greece, consonant with the Gambling Impact and Behavior Study (Gerstein et al. 1999). In particular, it was assumed that the participants in the personal interviews in OPAP points were part of the Greek general population and it was assumed that have similar levels of gambling frequency. This assumption implies that the weights already computed for the participants of the telephone survey can also be used for the participants of the personal interviews, as long as they belong to the same strata defined by gambling frequency and other relevant variables (Gerstein et al. 1999). Therefore, within poststratification adjustment cells defined by gambling frequency

and other variables, such as age and gender, the weights computed for the telephone-based survey can be also assigned to the survey in OPAP retail points.

Participants in the OPAP point survey that they had not fully completed the questionnaire of gambling frequency or they were found to be non-players as they did not played an OPAP game the last 12 months or were not engaged with other forms of gambling were discarded from the sample (71 cases), because they are not assumed to be representative of non-players in the general population.

Poststratification Adjustment Cells

The poststratification adjustment cells were defined according to the key response variable (the gambling frequency), the age group and the gender of the participants in the survey that will be adjusted (the OPAP retail survey in our case).

Therefore, the participants of the OPAP retail point survey (2320 cases) were assigned to cells such that the cells are as dissimilar as possible regarding the gambling frequency and to contain at least 15 cases (Cochran 1977; Lessler and Kalsbeek 1992). A total number of 17 cells were defined according to the frequency of playing OPAP games or other forms of gambling. The cells were further divided by age group and gender into 50 adjustment cells.

Once the poststratification adjustment cells were defined, the participants of the telephone survey were also classified in the cells according to their frequency gambling in OPAP games or other forms of gambling, age group and gender.

The final weights were calculated as follow: the weights for the participants that were identified as non-players in telephone survey were not changed, for each of the remaining 49 adjustment cells the mean weight of the telephone survey were assigned to the participants of the OPAP retail survey in the corresponding cell. Finally, the weight of each participant within each cell was multiplied by population size of the cell (estimated by the telephone survey) and divided by the sum of weight within the cell.

This procedure secured that the OPAP retail survey cases were weighted similarly to the telephone survey cases within each adjustments cell and that the sum of the weights equaled the total estimated population and within each adjustment cell.

Instrument

The research instrument entailed the following sections:

Gambling Involvement

The questions entailed in this section of the research tool are based on pertinent questions of the Canadian Problem Gambling Index and the South Oaks Gambling Screen, adjusted to the Greek gaming culture. They enquire about various forms of gambling regarding (1) participant's involvement with them during the past year (yes–no), (2) the frequency of this involvement (daily, 2–6 times/week, once per week, 2–3 times/month, once per month, 6–11 times/year, 1–5 times/year) and (3) the amount wagered (open-ended question). The games involved in the particular list can be grouped together under the following gaming categories: lotteries, football prognostics, fixed odds betting games, scratch, monitor games, casino, race track, internet gambling

and cards in private settings. If participants did not report engagement with one of the aforementioned games, the questions on frequency of involvement and amount wagered were omitted.

Further, information about participants' onset of gambling involvement was also sought.

Problem Gambling

To assess the presence of problem gambling, the Problem Gambling Severity Index (PGSI) was employed, which has been designed so as to serve both as a prevalence measure and a general population screen that is brief, reliable and valid. It encompasses 9 items tapping the frequency with which respondents had a gambling-related experience during the past year. Answers are rated on a four-point scale (0 = never, 1 = sometimes, 2 = most of the time, 3 = almost always) and higher composite scores indicate greater risk of problem gambling. Cut-off scores enable segregation of respondents into different subtypes of gamblers: (1) non-problem gamblers, (2) low-risk gamblers, (3) moderate-risk gamblers and (4) problem gamblers.

The PGSI is a part of the Canadian Problem Gambling Index (CPGI, Ferris and Wynne 2001), a relatively recent and promising tool for use in problem gambling research. The particular tool was preferred to other instruments on several grounds. It places problem gambling in a social context, it was developed and standardized on a general population sample, it was developed in accordance to DSM-IV criteria and it is brief, with better theoretical basis and psychometric properties (Jackson et al. 2009; McMillen and Wenzel 2006). Moreover, due to authors' research background (i.e. Social Psychiatry, Social Epidemiology, Health Policy, etc.) and our aim to investigate the influence of the recession on problem gambling and to identify its correlates- with heightened interest in socio-economic correlates- we opted for the CPGI, as it emphasizes on social and environmental determinants both in the content of the PGSI as well as well as in the correlates that make up the rest of the index (Ferris and Wynne 2001).

In order to incorporate the PGSI in the present study, translation and back translation of the tool was conducted by two professionals from the research team, who are fluent English speakers. Furthermore, to enhance its validity, a DSM-IV symptom checklist was also employed. Specifically, the checklist entails 10 yes–no questions corresponding to the germane DSM-IV criteria. A total score was computed which was subsequently used to segregate respondents into the following three categories: recreational gamblers (no DSM-IV symptoms), subthreshold gamblers (total score within the range 1–4) and pathological gamblers (total score within the range 5–10). A ROC curve analysis with the DSM-IV checklist as the gold standard revealed that: (1) the category recreational gambling of DSM-IV corresponded to the category "non-problem gambling" in PGSI, (2) the category "subthreshold gambling" of DSM-IV corresponded to "low risk of problem gambling", and (3) the category "pathological gamblers" corresponded to the categories "moderate risk of problem gambling" and "problem gambling". In this reasoning, the ROC curve findings only partially confirmed the initial cut off points of PGSI (Ferris and Wynne 2001). For reasons of comparability, the PGSI cut-ff points were employed; however, the categories "moderate risk of problem gambling" and "problem gambling" were clustered for identifying the risk factors of problem gambling.

Socio-demographic Characteristics

Data were gleaned with regard to participants' gender, age, marital status, educational attainment, living arrangement, employment status and monthly income.

Coping with the Financial Crisis

Participants were asked whether they had employed the following financial strategies so as to deal with the recession during the last year: (1) spending their savings, (2) selling their property, (3) taking a bank loan, (4) borrowing from their social networks, (5) gambling, (6) spending less on basic needs, and (7) spending less on non-basic needs. Responses to these items are in the format of yes–no.

The research instrument was pilot tested for its comprehensibility and thoroughness on a random sample of 50 gamblers.

It merits noting that the instrument was the same in both the telephone and the patron survey and that in both studies data were collected in the form of personal interviews.

Procedure

After informed consent was attained from participants (oral for the telephone survey and written for the patron survey), the interview was initiated. If participants reported no gambling involvement during the past year, questions pertaining to gambling activities and the PGSI items as well as the DSM-IV symptom checklist were not asked. Nonetheless, socio-demographic information was collected and these participants were classified as non-gamblers.

All interviews were carried out by well trained professionals, graduates in social sciences including psychology. One-week training encompassed lectures on interviewing about sensitive information, epidemiology and problem gambling; role playing and pilot interviews which were recorded and re-examined. Two researchers from the team supervised interviewers throughout the data collection period.

The study received approval from the Ethics Committee of the National and Kapodistrian University and was conducted in accordance with the ethical standards delineated in the 1964 Declaration of Helsinki.

Statistical Analysis

Statistical analysis was performed using the Complex Sample provided by the Statistical Package for Social Sciences software, version 21.0 (SPSS Inc. 2003, Chicago, IL, USA). SPSS Complex sample produce statistics and standard errors by incorporating complex sample designs into survey analysis. Sociodemographic characteristics of the participants were compared with the experience of gambling problem using Chi-square tests. Logistic regression analysis was used to examine the risk factors that are associated with the occurrence of gambling problem in the adult population and in those engaged with gambling in the last 12 months. In both logistic regression models, the moderate risk and problem gambler categories were combined into a single one so as

to increase the statistical power of the analysis (Afifi et al. 2010; Crockford et al. 2008). The level of statistical significance was set to 5%.

Results

Prevalence

A prevalence estimate for gambling of 41.0% was observed for the adult population in Greece in 2014 (Table 1). In particular, 25.7% of the adult population has not experienced problem with gambling, 7.4% has experienced low level of problems with few or no identified negative consequences, 5.5% were engaged with gambling and have experienced moderate level of problems leading to some negative consequences and 2.4% had experienced negative consequences and a possible loss of control.

Problem Versus Non-problem Gamblers: Socio-economic and Demographic Characteristics

Significant differences were observed between problem and non-problem gamblers in terms of their socio-economic and demographic characteristics (Table 2). Problem gamblers were in larger proportions males (83.1%), of younger age (76.8% younger than 54 years) and non-Greeks (5.7%); whereas, the corresponding proportions for their non-problem gamblers counterparts were 46.7% males, 66.7% younger than 54 years and 1.5% non-Greeks. Further, problem gamblers were more likely to be unmarried (38.9% vs. 26.8% for those without gambling problem) or divorced (8.2% vs. 4.2% for those without gambling problem) and less likely to be married (51.2% vs. 63.6%) or widowed (1.7% vs. 5.4%). Respondents with gambling problems were more likely to be living alone or with friends (21.0% vs. 16.2% for those without gambling problems) as well as with parents or other relatives (25.1% vs. 15.7%). Educational attainment, employment status and monthly income displayed significant differences between problem and non-problem gamblers. In particular, adults with gambling problems were more likely to have lower level of education (59.2% have less than or equal to 12 years of education vs. 46.9% of those without gambling problems have low education level); to be unemployed (14.5% vs. 11.3% of those without gambling problems) or employed (56.5% vs. 48.9%); and to have no income (9.2% of problem gamblers vs. 4.2% of non-problem gamblers).

The proportion of the sample that tackled the financial crisis by selling their own property (7.3%), taking a bank loan (6.9%), borrowing from their social networks (11.2%) and

Table 1 One-year prevalence of gambling involvement in the adult population in Greece

Prevalence of gambling behaviour	%	SE (%)
No gambling	59.0	0.0
Non-problem gambling	25.7	0.3
Low level of problems with few or no identified negative consequences	7.4	0.3
Moderate level of problems leading to some negative consequences	5.5	0.2
Problem gambling with negative consequences and a possible loss of control	2.4	0.1

Table 2 Socio-economic and demographic differences between adults with and without problem gambling as well as between new and old gamblers

	Adult population n = 4764			Gamblers (onset of gambling) n = 3054		
	No gambling problem (%)	Gambling problem (%)	*p*	< 2009 (%)	≥ 2009 (%)	*p*
Sex						
Male	46.7	83.1	< 0.001	67.1	49.4	< 0.001
Female	53.3	16.9		32.9	50.6	
Age						
18–24 years	10.6	14.6	< 0.001	4.3	56.8	< 0.001
25–34 years	20.2	22.5		24.8	22.0	
35–44 years	18.9	21.0		24.3	9.1	
45–54 years	17.0	18.7		19.7	4.4	
55–64 years	14.8	14.3		15.1	5.0	
65+ years	18.5	8.9		11.8	2.7	
Ethnicity						
Greek	98.5	94.3	< 0.001	98.0	97.2	0.229
Other	1.5	5.7		2.0	2.8	
Marital status						
Not married	26.8	38.9	< 0.001	26.0	69.5	< 0.001
Married/cohabitating	63.6	51.2		65.4	27.5	
Divorced	4.2	8.2		6.1	1.5	
Widowed	5.4	1.7		2.5	1.5	
Living with						
Alone/friends	16.2	21.0	< 0.001	15.5	20.9	< 0.001
Parents/other relatives	15.7	25.1		15.4	47.3	
His own family/partner	68.1	54.0		69.2	31.8	
Education						
< 12 years	18.3	21.6	< 0.001	15.5	8.2	< 0.001
12 years	28.6	37.6		30.0	44.9	
> 12 years	53.1	40.8		54.6	46.9	
Employment status						
Unemployed	11.3	14.5	< 0.001	13.0	14.9	< 0.001
Inactive	39.8	29.0		28.1	46.5	
Active	48.9	56.5		58.9	38.6	
Monthly income						
0	4.2	9.2	< 0.001	6.6	10.4	< 0.001
< €600	16.3	12.6		10.1	21.7	
≥ €600	79.5	78.2		83.3	67.9	
How did you deal with financial crisis in Greece						
Spending savings	33.6	30.3	0.102	35.0	29.3	0.038
Selling own property	4.5	7.3	0.004	4.9	5.5	0.642
Taking a bank loan	3.1	6.9	< 0.001	4.8	3.0	0.096
Borrowing from social networks	7.4	11.2	0.001	7.0	9.7	0.093

Table 2 (continued)

	Adult population n = 4764			Gamblers (onset of gambling) n = 3054		
	No gambling problem (%)	Gambling problem (%)	*p*	< 2009 (%)	≥ 2009 (%)	*p*
Gambling	1.4	23.6	< 0.001	7.6	5.9	0.186
Spending less on essential necessities	42.2	32.1	< 0.001	37.4	32.1	0.056
Spending less on non essential necessities	84.3	66.2	< 0.001	81.7	78.4	0.123

gambling (23.6%) was substantially higher among problem gamblers as compared to their non-problem counterparts (4.5, 3.1, 7.4 and 1.4% respectively). On the contrary, adults without gambling problems coped with the financial crisis by spending less on basic needs (42.2%) or non-basic needs (84.3%) as compared to those with problem gambling with (32.1% and 66.2%, respectively).

Old Versus New Gamblers: Socio-economic and Demographic Characteristics

Focusing on respondents who reported gambling during past year, the onset of gambling was examined. It was found that 80.4% of the gamblers started gambling before 2009 and 19.6% of the gamblers (new gamblers) started during the financial crisis.

Gamblers who started gambling during crisis were females in 50.6% of the cases; whereas among those who had already started gambling prior to the crisis, 32.9% were female. Individuals who started gambling during the financial crisis were younger: 78.8% of the cases were younger than 34 years old; while the corresponding figure among old gamblers was only 29.1%. Gamblers who started playing after 2009, were in most of the cases single and lived with their parents or other relatives as compared to old gamblers (69.5% vs. 26.0% not married, 47.3% vs. 15.4% lived with parents or other relative); whilst in fewer cases they lived with their own family or partner: and 31.8% vs. 69.2%. New gamblers had in higher proportion low educational level (53.1% less than or equal to 12 years) as compared to old gamblers (45.5% respectively). Further, new gamblers had in fewer cases active employment status (38.6% vs. 58.9% of old gamblers) and in greater frequency economically inactive employment status (46.5% vs. 28.1%). Concerning monthly income new gamblers had no or less than 600 euro monthly income more frequently as compared to old gamblers (32.1% vs. 16.7%).

Risk Factors for Problem Gambling in the General Population

Table 3 depicts logistic regression results with respect to risk factors for problem gambling in the general population. As shown in the table, males are four times more likely to experience gambling problems as compared to women (OR 4.25, 95% CI 3.18–5.69); while adults with Greek ethnicity have 60% less chance to face gambling problems than those with other than Greek ethnicity (OR 0.41, 95% CI 0.25–0.68). Individuals who were living with their parents or other relatives are by 70% more likely to face moderate or serious gambling problems than those who are living with their own family or partner (OR 1.73, 95% CI 1.07–2.77). Adults with less than 12 years of education are twice as likely

Table 3 Logistic regression for problem gambling in the general population

		OR	95% CI	*p*
Intercept		0.13	0.06–0.32	< 0.001
Gender (ref.cat.: female)	Male	4.25	3.18–5.69	< 0.001
Age (ref. cat.: 18–24 years)	65+ years	0.60	0.35–1.02	0.061
	55–64 years	1.18	0.74–1.88	0.499
	45–54 years	1.40	0.87–2.24	0.166
	35–44 years	1.51	0.95–2.39	0.078
	25–34 years	1.29	0.84–1.98	0.248
Ethnicity (ref. cat.: other)	Greek	0.41	0.25–0.68	< 0.001
Marital status (ref. cat.: not married	Widowed	0.62	0.30–1.26	0.183
	Divorced	1.57	0.99–2.47	0.054
	Married/cohabitating	0.86	0.53–1.40	0.546
Living with (ref. cat.: his own family/partner)	Alone/friends	1.26	0.77–2.05	0.354
	Parents/other relatives	1.73	1.07–2.77	0.024
Education (ref. cat.: > 12 years)	< 12 years	2.05	1.53–2.75	< 0.001
	12 years	1.54	1.21–1.94	< 0.001
Income monthly (ref. cat.: 0)	> 600	0.69	0.47–1.01	0.058
	≤ 600	0.47	0.31–0.73	0.001
Employment status (ref. cat.: active)	Unemployed	1.03	0.74–1.43	0.865
	Inactive	1.04	0.76–1.43	0.791
Spending savings	Yes	0.64	0.51—0.79	< 0.001
Selling property	Yes	1.05	0.67–1.64	0.828
Taking a bank loan	Yes	2.27	1.42–3.64	0.001
Borrowing from the social networks	Yes	1.16	0.81–1.66	0.405
Gambling	Yes	17.72	12.96–24.22	< 0.001
Spending less on basic needs	Yes	0.61	0.49–0.75	< 0.001
Spending less on non-basic needs	Yes	0.44	0.35–0.55	< 0.001

as those who have more than 12 years of education to report gambling problems (OR 2.05 95% CI 1.53–2.75) and those who have 12 years of education have 54% higher probability of facing gambling problems than those who have more than 12 years of education (OR 1.54 95% CI 1.21–1.94). Individuals with low monthly income (less than 600 euro) are by 53% less likely to experience gambling problems than those who have no monthly income at all (OR 0.47, 95% CI 0.31–0.73). Adults who reported spending their savings in order to deal with the financial crisis are by 36% less likely to experience gambling problems than those who did not (OR 0.64, 95% CI 0.51–0.79). Adults who have taken a bank loan are twice more likely to face gambling problems as those who have not (OR 2.27, 95% CI 1.42–3.64). Individuals who have reduced their expenses on basic and non-basic needs are less likely to experience gambling problems (OR 0.61, 95% CI 0.49–0.75) and (OR 0.44, 95% CI 0.35–0.55) respectively than those who have not.

Risk Factors for Problem Gambling Among Gamblers

Table 4 presents risk factors for problem gambling among respondents who reported gambling engagement during the last 12 months. Additionally to the possible risk

Table 4 Risk factors for problem gambling among gamblers

		OR	95% CI	*p*
Intercept		0.21	0.08–0.52	0.001
Gender (ref.cat.: female)	Male	3.81	2.56–5.65	< 0.001
Age (ref. cat.: 18–24 years)	65+ years	1.12	0.63–1.98	0.701
	55–64 years	1.55	0.95–2.54	0.081
	45–54 years	1.62	1.00–2.62	0.049
	35–44 years	1.81	1.15–2.85	0.010
	25–34 years	1.39	0.92–2.12	0.121
Ethnicity (ref. cat.: other)	Greek	0.37	0.21–0.62	< 0.001
Marital status (ref. cat.: not married	Widowed	0.62	0.29–1.33	0.221
	Divorced	1.45	0.88–2.41	0.146
	Married/cohabitating	0.88	0.56–1.38	0.575
Living with (ref. cat.: his own family/partner)	Alone/friends	1.44	0.91–2.27	0.120
	Parents/other relatives	1.67	1.07–2.62	0.025
Education (ref. cat.: > 12 years)	< 12 years	2.14	1.57–2.91	< 0.001
	12 years	1.44	1.13–1.84	0.004
Income monthly (ref. cat.: 0)	> 600	1.05	0.73–1.51	0.806
	≤ 600	0.88	0.57–1.35	0.561
Employment status (ref. cat.: active)	Unemployed	1.01	0.73–1.41	0.948
	Inactive	1.00	0.73–1.38	0.980
Spending savings	Yes	0.63	0.50–0.80	< 0.001
Selling own property	Yes	1.12	0.73–1.72	0.613
Taking a bank loan	Yes	1.76	1.07–2.89	0.026
Borrowing from social networks	Yes	1.36	0.95–1.95	0.094
Gambling	Yes	8.35	6.22–11.22	< 0.001
Spending less on basic needs	Yes	0.66	0.53–0.83	< 0.001
Spending less on non-basic needs	Yes	0.41	0.33–0.52	< 0.001
New gamblers (ref. cat.: no)	Yes	2.53	1.48–4.34	0.001
Gender * new gamblers	Male * yes	0.37	0.20–0.70	0.002

factors associated with the gambling problem, the indicator of new gamblers (start gambling in 2009 and onwards) and its interaction with gender are also included in the model. As shown in the Table, men, gamblers aged between 35 and 54 years, respondents who reported living either with their parents or other relatives and participants with educational level equal to or less than 12 years were found to display increased odds of suffering from problem gambling. It is noteworthy that participants who reported gambling as a means for tackling the crisis were roughly 8 times more likely to suffer from problem gambling than those who did not (OR = 8.35, 95% CI = 6.22–11.22). On the contrary, participants who reported spending their savings or spending less on basic or non-basic needs were less likely to meet the criteria for problem gambling that those who did not. New gamblers were found to be 2.53 times more likely to face gambling problems than old gamblers (OR = 2.53, 95% CI = 1.48–4.34).

Figure 1 presents the average predicted probabilities of gambling problem for males and females when they started gambling before or after 2009. The probabilities of males facing gambling problems do not differ among those started gambling before or after 2009. On

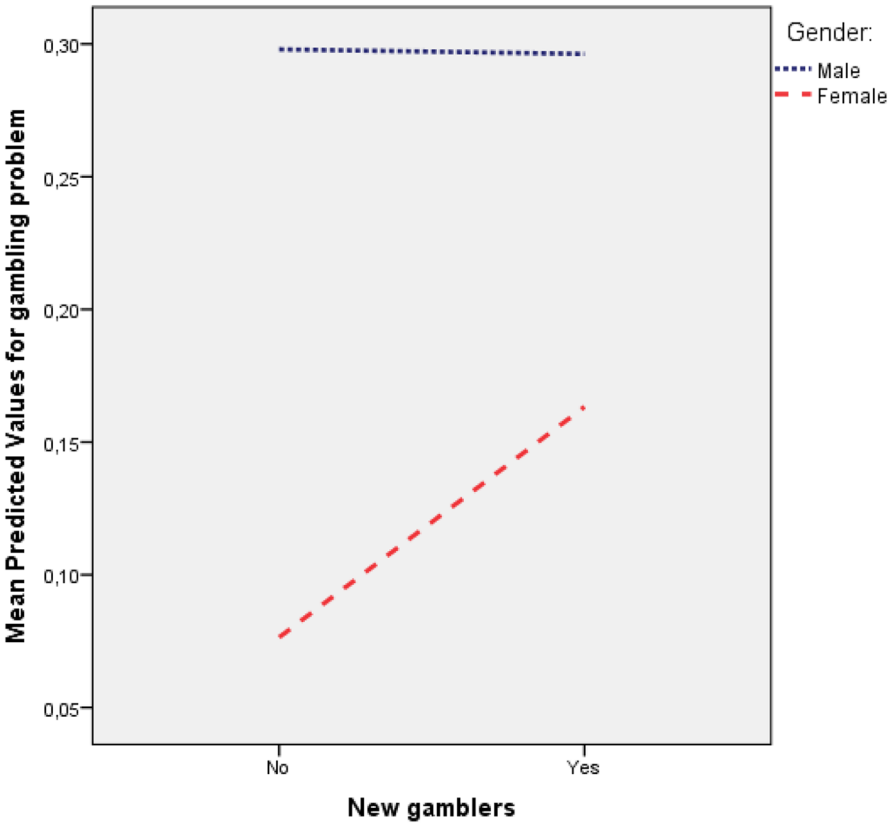

Fig. 1 Mean values of the predicted probabilities of gambling problem by gender and new gamblers or not

the other hand, the corresponding probabilities for females are higher when they started gambling during financial crisis and than those who have started gambling before 2009. In this reasoning, women were more influenced by the recession in order to exhibit symptoms of problem gambling. Men appear unaffected, in spite of the fact that they are more likely than women to display problem gambling overall.

Discussion

Prevalence studies on problem gambling are fundamental in order to assess the size of the problem, to monitor changes overtime, to identify subgroups displaying heightened risk and to inform allocation of resources for health care as well as to plan treatment and prevention interventions (Sassen et al. 2011). This is the first prevalence study on problem gambling ever conducted in Greece. On the grounds of methodological limitations discerned in other telephone surveys with regard to selection and sampling bias (Stucki and Rihs-Middel 2007), the present study adopted a methodology similar to that of Gambling Impact and Behavior Study (Gerstein et al. 1999). In this rationale, data emanating from a telephone survey and a patron survey conducted outside OPAP retail

stores were combined. It merits noting that OPAP retail stores are places where citizens may gamble, socialize or pay bills for public utilities and therefore they are ingrained in Greek people's daily life. In a similar methodological note, Abbot et al. (2004b) raise the point of underrepresentation of problem gamblers in telephone surveys, while in their study they found that problem gambling rate was higher among those who responded to a postal survey as compared to those who were contacted via telephone.

Past year prevalence of problem gambling was found to be 2.4%. This is within the range found in the most recent systematic reviews in the literature. Stucki and Ris-Middel (2007) have recorded past year prevalence of problem gambling to be between 0.15% and 3.5% in North America, Europe, Australia/New Zealand and Asia the time period 2000–2005. In a similar vein, Sassen et al. (2011) have computed past year prevalence of problem gambling to be within the range of 0.02–2%. A review drawing on European studies solely documented past year rates of pathological gambling to be lower than 1% in all countries with the exception of Finland and UK (Kun et al. 2012). The divergence observed between our estimate and that of Kun et al. (2012) can be ascribed to the different methodologies employed, which have been shown to influence prevalence rates (Sassen et al. 2011; Williams and Volberg 2009); as well as to a potential impact of the financial crisis in Greece.

Existing literature on the risk factors of problem gambling has explored individual factors, such as socio-demographic characteristics as well as contextual factors, such as gambling availability and the presence of economic downturn (Orford et al. 2010) Concerning the former, findings of the present study indicate that male gender, minority status, living with one's parents, low educational level and low to zero income increase the odds of suffering from problem gambling. Several studies have corroborated an association between gender and problem gambling (Shaffer et al. 2004; Johansson et al. 2009; Kun et al. 2012; Volberg 2002) as well as between ethnicity and problem gambling (Kun et al. 2012; Shaffer et al. 2004; Welte et al. 2004; Volberg 1994). Living with one's parents may be explained in line with evidence indicating a link between problem gambling and mental health (Crockford and el-Guebaly 1998), or by the disruptive consequences of problem gambling on gamblers' personal life (Griffiths 2004; Kalischuk et al. 2006).Alternatively, and jointly with results pertaining to the influence of low educational level and low income, participants of low socio-economic status appear at heightened risk for problem gambling. This is consonant with other studies in the field (Kun et al. 2012; Orford et al. 2010; Shaffer et al. 2004; Welte et al. 2004). Arguably, people belonging to lower socio-economic strata may view gambling as an escape from poverty (Schissel 2001).

The aforementioned hypothesis is also substantiated by evidence suggesting a link between the financial crisis in Iceland and gambling behaviour (Olason et al. 2015, 2017). A higher proportion of new gamblers (starting after the outset of the crisis in Iceland) reported financial strain as compared to non-gamblers (Olason et al. 2017); while people with elevated rates of financial hardship amid the recession were more likely to buy lottery or scratch tickets (Olason et al. 2015, 2017) as compared to respondents without financial hardship. Taken together, people with financial difficulties may consider gambling as an attractive means for tackling their grim financial situation.

This is in line with results from our study. In particular, participants who reported gambling engagement as a coping strategy for dealing with the recession were roughly 8 times more likely to exhibit problem gambling as compared to those who did not. Further, among the coping strategies for tackling the recession, spending less on basic or non-basic needs as well as spending one's savings were found to protect against problem gambling. In this reasoning, it seems that participants who are more proactive (they had managed to

put some money aside) or conservative and down-to-earth in managing their finances did not meet criteria for problem gambling. As a result of this, it is likely that more impulsive personalities may be more susceptible into developing problem gambling during the recession. Moreover, participants who started gambling amid the crisis were twice more likely to meet criteria for problem gambling as compared to those who had started prior to the crisis. Therefore, it is highly likely that the recession may have the occurrence of problem gambling.

Nonetheless, a closer look on these findings reveals that this holds true only for female participants. Thus, problem gambling is probably affected by recession only among in women, lending further credence to the claim that the trajectories that lead women and men to problem gambling are different (Blanco et al. 2006; Martins et al. 2004; Shaffer et al. 2004). Specifically, it has been argued that social norms may hinder gambling behaviour more strongly among women than among men, explaining thus the lower prevalence rates of problem gambling discerned in female respondents (Potenza et al. 2001). In this reasoning, the financial crisis may have provided a good excuse for gambling engagement in women, weakening thus the restraining influence of social norms. Alternatively, in light of evidence suggesting a steady increase in the prevalence of depression in Greece as a corollary to the crisis (Economou et al. 2013, 2016), it may be the case that increases in the prevalence of problem gambling among women runs in parallel with that of depression, lending support to the claim that women may gamble to relieve depressive feelings. This concurs with evidence suggesting that women with pathological gambling are more likely than men to gamble in an endeavour to relieve depression or for other emotional reasons (Blanco et al. 2006; Grant and Kim 2002). Taken together, evidence from the present study suggests different pathways to gambling (Blaszczynski and Nower 2002).

The study was not without its limitations. Gaming type and other postulated risk factors of problem gambling, such as cognitive distortions and personality types (Johansson et al. 2009), were not taken into consideration in the multiple regression models and thus they may have acted as confounding variables. In a similar vein, the association between problem gambling and proximity to casino was not explored due to casino being a comparatively unpopular gaming type in Greece, as compared to OPAP games and Internet gambling. Nonetheless, as the presence of a casino in a city may increase gambling opportunities and facilitate access to gambling venues, a further report comparing and contrasting gambling involvement as well as the prevalence of problem gambling in cities with and without casino is currently being prepared. Regarding, the instrument employed for measuring problem gambling, exploration of the psychometric properties of PGSI against the DSM-IV checklist provided only partial support for the cut-off points described by the developers of the tool (Ferris and Wynne 2001); however, for reasons of comparability, their cut off points were adopted in the prevalence estimates of the present study. Nonetheless, the logistic regression models were based on the results emanating from the ROC curve analysis. More research on the psychometric properties of the PGSI is definitely warranted. Further, due to the cross-sectional nature of the study design, one cannot draw conclusions about the direction of causality of the observed associations. For example, one cannot disentangle if low income is a determinant or a consequence of problem gambling. Finally, as there was not prevalence study on problem gambling in Greece prior to the crisis, information about onset of gambling behaviour was gleaned retrospectively. Therefore, a potential influence of the recession on problem gambling warrants further investigation.

In conclusion, prevalence estimates of past year problem gambling in Greece was not found to be substantially different from that of other studies. Slight differences may be ascribed to the methods chosen as well as the potential influence of the enduring recession

in the country. Men, people who belong to ethnic minorities, respondents who live with their family of origin, respondents with low educational level and those with low to zero income were at heightened odds of suffering from gambling disorder. In this reasoning, prevention and treatment efforts should be tailored to these characteristics. Concomitantly, a significant interaction effect between the onset of gambling engagement and gender lends some credence to the claim that problem gambling is a multifaceted disorder. Additionally, the trajectories from gambling involvement to disordered gambling appear to be gender-specific Thus, interventions and treatment plans should address the complexity of the issue and be tailored by gender.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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